

How to double the tool life-length? Rheocasting offers double tool life length!

As Rheocasting now is making the commercial breakthrough the focus has been on design drivers. The tool life length has been overlooked by the customers of the castings as total cost calculations still is a challenge in many organizations. Our opinion is that this is a pity, as the tool management costs are one of the more important drivers of the cost of a die casted part.

The use of Rheocasting enables a lot of nice features for designers to obtain a number of functionalities as leak free part, high thermal conductivity and strength. These drives are nice but the total cost and the impact of the costs in the foundry regarding the heart of the process, the tool, is seldom addressed.

About tool wear in Rheocasting

At Comptech we have been developing the Rheocasting process for 10 years and one of our findings are that the tool life length is increased up to the double life length. As professionals in the industry knows, the tool wear is very individual of the part geometry and the demands of the part why every part has its own challenges. However, the wear is in our opinion a functionality of the following with our remarks as in the table below:

Wear factor	Rheo vs HPDC
Metal temperature	100 °C reduction of melt temperature. Melt temperature is the key factor in tool wear according to tool steel producers.
Temp cycling of tool	Lower as the spraying is less and the tool temperature is higher making the temperature amplitude lower why thermal fatigue of the tool surface is decreased.
Erosion	Reduced as 5-10 times slower fill of the tool is generation a softer flow

The standard model for the tool cost is based on the amortization of the tool, and most often other factors are missed as:

- Increase of after treatment as the tool is worn as for example polishing and grinding
- The verification work, both for customer and supplier
- The constant lack of time at tool exchange represents a supply risk

Looking at our past 20 years in business the tool replacement process is a singularity where big problems occur that could seriously disturb the production and create a supply risk for the foundry and the customer, a situation that is always very costly for both parties.

About Comptech AB

Comptech AB is an innovative foundry group with production in Sweden and in China. In total 200 people work in our company, most of them at the volume facility in Suzhou. R&D center is based in Skillingaryd in Sweden. Almost all R&D efforts has been based on Rheocasting and among recent results leak free components and components with high thermal conductivity (up to 200 W/mK) has now entered the market.

As the market has increased dramatically recent years Comptech acts both as a supplier of part but also as a supplier of equipment and know how to be able to support our customers. The Technology Migration Solution (TMS) has been developed with customers in the automotive industry and the solution is based on: fast capacity ramp up, 2:nd source demand and also to keep preferred supplier base intact.

About Rheocasting

The Rheocasting process is a semi solid casting process and is basically a melt preparation process for high pressure die casting. The process has been developed for 10 years at Comptech AB and the University of Jönköping in order to reach a low cost process that enables casting of high quality components.

The process has now its commercial breakthrough as based on the need of qualified components for telecom and automotive to reach component functionality needed for 5G, E-cars and low emission vehicles.

Rheocasting is one out of many different semi solid processes and all of them have the use of a slurry in common. The difference between Rheocasting as we are using the process and the others are the low production cost and the high solid fraction, giving several advantages.

For further information:

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